# A Pilot Project: Washington State School Seismic Needs Assessment

With its unique geographic and geologic location along the Pacific Rim, the State of Washington is situated within an area of high seismic hazard. In fact, the Federal Emergency Management Agency (FEMA) ranks Washington second in the nation for annualized earthquake losses only behind the State of California (source: FEMA 366).

This earthquake hazard was experienced by our region firsthand on February 28, 2001 when the magnitude 6.8 Nisqually Earthquake caused significant damage from the Puget Sound to Walla Walla. As our understanding of the earthquake threat to the Pacific Northwest region continues to evolve, we need to remain vigilant to the risks that these natural hazards pose, especially to our State's most valuable assets, our children.

A goal that has been on the horizon for several Washington State agencies, including but not limited to the Military Department's Emergency Management Division (EMD), Department of Natural Resources-Division of Geology and Earth Resources (DNR), the Office of Superintendant of Public Instruction (OSPI), and Washington State's Seismic Safety Committee is to systematically evaluate all public school buildings and critical facilities within the Washington in order to establish the seismic risk for each. This will allow for the prioritization of structures in need of seismic retrofitting across the state and permit a strategic, targeted approach for alleviating the risk of potentially dangerous structures.

The aforementioned agencies, with funding support from FEMA, will be undertaking a pilot project starting in April 2010 to evaluate school buildings in two school districts. Presently, we are working with Walla Walla Public Schools and the Aberdeen School District as candidates for this trial effort. Since the staff and travel for this project is funded 100% by FEMA, the local districts will not need to provide any financial match or in-kind assistance as a condition of participating.

The assessment will be conducted using a nationally accepted methodology known as ASCE 31: Seismic Evaluation of Existing Buildings and will be completed by volunteer structural engineers. This would entail professionally licensed volunteer experts from the Structural Engineering Association of Washington (SEAW) and Washington Association of Building Officials (WABO) walking through school buildings to identify, inventory, and rank such buildings according to their expected safety and usability during and after earthquakes.

To get a true picture of risk for a particular site, staff from the Department of Natural Resources, will use non-invasive methods that assess the physical site characteristics by measuring how seismic waves travel through soil. Overall, this comprehensive method will provide in-depth information as to how a site and a specific school structure would perform during an earthquake. The duration of an assessment at each school site would take approximately 1-2 hours and will not disrupt the classroom learning environment. In fact, teachers have used the site assessments by DNR as a teaching opportunity and the DNR staff have been able to provide a brief presentation to school children.

Upon completion of this pilot project, participating districts will be provided with a study report that details the findings for each school facility as well as provides an ordered list of structures that should be targeted for retrofitting. In addition, the results of this study can be used by the school district strongly justify an application for FEMA grant funding through the Pre-Disaster Mitigation Grant Program (PDM) and the Hazard Mitigation Grant Program (HMGP) to seismically retrofit deficient structures, thus alleviating some of the future costs that could be incurred. A report will detail the findings of this pilot effort and recommendations for future work will be provided.